

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference IP/P3336/WOD	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 03/04093	International filing date (day/month/year) 24/09/2003	(Earliest) Priority Date (day/month/year) 25/09/2002
Applicant QINETIQ LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

PURIFICATION OF ELECTROCHEMICALLY DEOXIDISED REFRACTORY METAL PARTICLES BY HEAT PROCESSING

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

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Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A method for purifying metal M1 particles manufactured by an electrochemical reduction process, the method comprising the steps of introducing the metal M1 particles into a heat source (13) at a temperature substantially equal to or higher than the melting point of M1 so as to cause vaporisation of some or substantially all of the contaminating impurities present, removing the vaporised impurities from the vicinity of the particles, and cooling the purified metal M1 particles. The heat source may comprise a plasma torch, a laser, an electric arc or an induction coil. Preferably the particles are heated by free-fall through a plasma torch.

The purified particles can be used directly in lower temperature powder metallurgy processes and have a fully dense spherical particle morphology, imparting good flowability. The purification process can also be incorporated as an integral stage of sheet or stock production processes based on particle feedstocks that have been produced by electrochemical reduction.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C22B34/12 C22B9/22 C22B9/14 C25C3/28 B22F5/00
B22F3/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C22B C25C C25F B22F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 047 665 A (WESTINGHOUSE ELECTRIC CORP) 17 March 1982 (1982-03-17)	1
Y	page 1, line 1 - line 18; claim 7 page 2, line 23 - line 31	2-30
Y	GB 2 359 564 A (SECR DEFENCE) 29 August 2001 (2001-08-29) claims 1-11	1-30
Y	EP 0 153 296 A (KOS BERND) 28 August 1985 (1985-08-28) page 7 - page 9; claims 4-10; figures 1-3	1-30
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

11 August 2004

Date of mailing of the international search report

20/08/2004

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MAC RAE D R: "PLASMA ARC PROCESS SYSTEM, REACTORS, AND APPLICATIONS" PLASMA CHEMISTRY AND PLASMA PROCESSING, PLENUM PRESS. NEW YORK, US, vol. 9, no. 1, SUPPL, 1 March 1989 (1989-03-01), pages 85S-118, XP000117580 ISSN: 0272-4324 page 113S - page 114S; figures 17,22,24,25; tables II,III -----	2-30
Y	BOMBERGER H B: "The melting of titanium" JOURNAL OF METALS - JOM, METALLURGICAL SOCIETY OF THE AIME. NEW YORK, US, vol. 36, no. 12, 1 December 1984 (1984-12-01), pages 39-47, XP002086633 figures 7-9 -----	1-30
Y	PATENT ABSTRACTS OF JAPAN vol. 0124, no. 62 (C-549), 5 December 1988 (1988-12-05) & JP 63 183145 A (SUMITOMO ELECTRIC IND LTD), 28 July 1988 (1988-07-28) abstract -----	2-5,16, 27-30
X	US 5 147 451 A (LELAND JOHN D) 15 September 1992 (1992-09-15) claims 1-4 -----	1,3,6,7, 12,14 17
X	US 4 727 928 A (DE VYNCK IVAN A ET AL) 1 March 1988 (1988-03-01) claims 1,2; example 1 -----	1,3,6,7, 9,10,19, 24-30
Y	US 4 114 251 A (SOUTHERN RAYMOND L ET AL) 19 September 1978 (1978-09-19) column 1, line 36 - column 2, line 62; figures 1-3 -----	2-5,7,9, 19-23
Y	US 3 442 321 A (DEVILLARD JACQUES ET AL) 6 May 1969 (1969-05-06) claim 1; figures 1,3 -----	19-25
Y	US 4 612 179 A (SANJURJO ANGEL ET AL) 16 September 1986 (1986-09-16) abstract -----	1,8,15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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			AT 39366 T	15-01-1989
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			JP 62502319 T	10-09-1987
			NL 8620174 T	02-02-1987
			US 4828814 A	09-05-1989

Information on patent family members

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Form PCT/ISA/210 (patent family annex) (January 2004)